United States District Court

EASTERN DISTRICT OF TEXAS
SHERMAN DIVISION

GESTION PROCHE, INC.	§	
	§	
v.	§	Civil Action No. 4:16-CV-407
	§	Judge Mazzant
DIALIGHT CORP.	§	
	§	

MEMORANDUM OPINION AND ORDER

Before the Court are Plaintiff Gestion Proche, Inc.'s ("Plaintiff" or "GP") Opening Claim Construction Brief (Dkt. #35), Defendant Dialight Corp.'s ("Defendant" or "Dialight") Responsive Claim Construction Brief (Dkt. #40), and Plaintiff's Reply Claim Construction Brief (Dkt. #43).[1] Also before the Court are the parties' April 13, 2017 Joint Claim Construction and Prehearing Statement (Dkt. #30) and the parties' June 5, 2017 Joint Claim Construction Chart (Dkt. #38). The Court held a claim construction hearing on June 15, 2017, to determine the proper construction of the disputed claim terms in United States Patent No. 7,557,524 (the "'524 Patent").

[1] The parties proposed the schedule of an opening brief due May 24, 2017, a response brief due June 7, 2017, and a reply brief due June 14, 2017, followed by the claim construction hearing on June 15, 2017 (Dkt. #18-1 at p. 2). The Court adopted this proposed briefing schedule (Dkt. #20 at p. 2). Plaintiff later requested a two-day extension for its opening brief, which Defendant did not oppose (Dkt. #34). Defendant then requested a two-day extension for its response brief, which Plaintiff did not oppose and the Court granted (Dkt. #36; Dkt. #37). Nonetheless, Plaintiff has stated in its reply brief:

> GP has had only three days to analyze Dialight's Responsive Claim Construction Brief, and to prepare this [reply] and for the claim construction hearing. Counsel for GP conferred with counsel for Defendant to determine if Defendant was opposed to a brief two (2) day extension to file this reply given the time constraints. Counsel for Defendant indicated Defendant was opposed to such an extension. Accordingly, GP is filing this reply without a request for an extension of time.
>
> Given the time constraints, the scope of this reply is limited to those matters GP has been able to address during this brief three day period.

(Dkt. #43 at p. 1). To the extent Plaintiff has asserted it has been prejudiced by the reduction of the reply time from five business days to three business days, any purported prejudice is not cognizable in light of the parties' joint proposed schedule and the absence of any objections to the first two above-noted requests for extensions. At the June 15, 2017 hearing, Plaintiff's counsel stated that Plaintiff does not intend to assert that it has been unfairly prejudiced.

The Court issues this Memorandum Opinion and Order and hereby incorporates-by-reference the claim construction hearing and transcript as well as the demonstrative slides presented by the parties during the hearing. For the following reasons, the Court provides the constructions set forth below.

BACKGROUND

Plaintiff brings suit alleging infringement of United States Patent No. 7,557,524. The '524 Patent, titled "Lighting Device," issued on July 7, 2009, and bears an earliest priority date of December 19, 2001. The Abstract of the '524 Patent states:

> An LED lighting device is provided which is capable of being connected to a network and being controlled by a host computer also connected to the network. The lighting device has several lifespan expanding features such as including several extra LEDs such that as the LEDs of the lighting device degrade over time more LEDs can be turned on thus allowing a constant luminosity to be maintained.

'524 Patent at Abstract. Plaintiff has asserted Claims 1, 6, 12, 14, 15, and 17 of the '524 Patent (Dkt. #35 at p. 1).

LEGAL STANDARDS

Claim construction is a matter of law. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996). The purpose of claim construction is to resolve the meanings and technical scope of claim terms. *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). When the parties dispute the scope of a claim term, "it is the court's duty to resolve it." *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008).

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*,

381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent's intrinsic evidence to define the patented invention's scope. *Id.* at 1313–14; *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Grp., Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification, and the prosecution history. *Phillips*, 415 F.3d at 1312–13; *Bell Atl. Network Servs.*, 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

Claim language guides the Court's construction of claim terms. *Phillips*, 415 F.3d at 1314. "[T]he context in which a term is used in the asserted claim can be highly instructive." *Id.* Other claims, asserted and unasserted, can provide additional instruction because "terms are normally used consistently throughout the patent." *Id.* Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.*

"[C]laims 'must be read in view of the specification, of which they are a part.'" *Id.* at 1315 (quoting *Markman*, 52 F.3d at 979). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). In the specification, a patentee may define his own terms, give a claim term a different meaning than it would otherwise possess, or disclaim or disavow some claim scope. *Phillips*, 415 F.3d at 1316. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. *See Cultor Corp. v. A.E. Staley Mfg. Co.*, 224 F.3d 1328, 1331 (Fed. Cir. 2000) ("Claims are not correctly construed to

cover what was expressly disclaimed."). This presumption does not arise when the patentee acts as his own lexicographer. *Irdeto Access, Inc. v. EchoStar Satellite Corp.*, 383 F.3d 1295, 1300 (Fed. Cir. 2004).

The specification may also resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex*, 299 F.3d at 1325. For example, "[a] claim interpretation that excludes a preferred embodiment from the scope of the claim 'is rarely, if ever, correct.'" *Globetrotter Software, Inc. v. Elam Comput. Grp. Inc.*, 362 F.3d 1367, 1381 (Fed. Cir. 2004) (quoting *Vitronics*, 90 F.3d at 1583). But, "[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims." *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988); *Phillips*, 415 F.3d at 1323.

The prosecution history is another tool to supply the proper context for claim construction because a patentee may define a term during prosecution of the patent. *See, e.g.*, *Home Diagnostics Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1356 (Fed. Cir. 2004) ("[A] patent applicant may define a term in prosecuting a patent . . . ."). The well-established doctrine of prosecution disclaimer "preclud[es] patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution." *Omega Eng'g Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). When a patentee distinguishes a claimed invention over the prior art, he is "indicating what the claims do not cover" and "by implication surrendering such protection." *Ekchian v. Home Depot, Inc.*, 104 F.3d 1299, 1304 (Fed. Cir. 1997). "As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of

the intrinsic evidence and protects the public's reliance on definitive statements made during prosecution." *Omega Eng'g*, 334 F.3d at 1324. However, the prosecution history must show that the patentee "clearly and unambiguously 'disclaimed or disavowed the proposed interpretation during prosecution to obtain claim allowance."' *Middleton Inc. v. Minn. Mining and Mfg. Co.* (*3M Co.*), 311 F.3d 1384, 1388 (Fed. Cir. 2002) (quoting *Standard Oil Co. v. Am. Cyanamid Co.*, 774 F.2d 448, 452 (Fed. Cir. 1985)). Statements will constitute disclaimer of scope only if they are "clear and unmistakable statements of disavowal." *Cordis Corp. v. Medtronic AVE, Inc.*, 339 F.3d 1352, 1358 (Fed. Cir. 2003). "An ambiguous disavowal will not suffice." *Schindler Elevator Corp. v. Otis Elevator Co.*, 593 F.3d 1275, 1285 (Fed. Cir. 2010) (internal quotation marks and citation omitted).

Although "less significant than the intrinsic record in determining the legally operative meaning of claim language," the Court may rely on extrinsic evidence to "shed useful light on the relevant art." *Phillips*, 415 F.3d at 1317 (internal quotation marks and citation omitted). Technical dictionaries and treatises may help the Court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but such sources may also provide overly broad definitions or may not be indicative of how terms are used in the patent. *Id.* at 1318. Similarly, expert testimony may aid the Court in determining the particular meaning of a term in the pertinent field, but "conclusory, unsupported assertions by experts as to the definition of a claim term are not useful." *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

ANALYSIS

Agreed Claim Terms

The parties have agreed upon the following constructions:

Term	Agreed Construction
"light emitting diode" / "light emitting diodes" Claims 1, 12, 15	"a semiconductor diode that emits light when conducting current"
"part of said illumination groups" Claim 1	"a member of one or more of said illumination groups"
"separate from said illumination groups" Claim 1	"not a member of one or more of said illumination groups"

(Dkt. #30 at p. 1; Dkt. #38, App'x A at pp. 2, 7).

Disputed Claim Terms

A. "control means for maintaining the luminosity of the lighting device at a desired level"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
35 U.S.C. § 112, ¶ 6. Function: "maintaining luminosity of the lighting device at a desired level" Structure: The various embodiments of computers, or components thereof, or both, or equivalents thereof, as described in e.g. 2:38–2:41; 4:53–62; 10:65–67; 21:1–22:37; FIGS. 4, 8, and 9–11.	Defendant contends that this phrase is governed by 35 U.S.C. § 112, ¶ 6. Function: "controlling the electrical current provided to the illumination groups to ensure the measured brightness of the lighting device remains at a constant predetermined level" Structure: "a microprocessor connected to one or more current sources and a light intensity measuring device and configured to calculate the LED degradation factor using the formula FI = ((L1/Lr1)+(L2/Lr2))/2, to calculate the number of LED groups to be illuminated throughout the lighting device's lifecycle using the formula $N_{on}(t) = L_{tot} / \{n_{led} * L_{led}(t)\}$ and to select and turn on the LED groups with the least amount of usage time to ensure all LED groups have an equalized usage time as described at Col. 15, ll. 5 – 21, Col. 13, ll. 5 – 45, and Col. 16, ll. 22 – 41, and equivalents thereof"

(Dkt. #30, Exhibit A at p. 2; Dkt. #35 at p. 5; Dkt. #38, App'x A at pp. 2–3; Dkt. #40 at pp. 11–12). The parties submit that this term appears in Claim 1 (Dkt. #3J0, Exhibit A at p. 2; Dkt. #38, App'x A at p. 2). The parties agree that this is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6.

1. The Parties' Positions

Plaintiff argues that whereas its proposal is supported by the specification, Defendant's proposal "contravenes the plain language of the claims" and "does not account for the

embodiments of the claimed invention where the lighting device's luminosity is controlled based only [on] a luminosity reading" (Dkt. #35 at p. 6).

Defendant responds that "the stated function is maintaining the luminosity of the lighting device—*not* maintaining the luminosity of a network of lighting devices" (Dkt. #40 at p. 13). Defendant also argues that "[t]he parties agree that the corresponding structure includes microprocessor 80," "[b]ut the corresponding structure must also include the algorithms executed by microprocessor 80 to perform the claimed function, which Plaintiff omits" (Dkt. #40 at p. 14). Defendant further argues the specification does not clearly link the "Host PC" to the claimed "maintaining" function (Dkt. #40 at p. 15).

Plaintiff replies by emphasizing that Claim 1 recites that control is carried out "in response to a luminosity reading *and/or* a usage time measurement" (Dkt. #43 at p. 2). As for the corresponding structure, Plaintiff notes that an algorithm need not be a mathematical formula but rather may be set forth in prose or "in any other manner that provides sufficient structure" (Dkt. #43 at p. 3 (quoting *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008))). Moreover, Plaintiff argues that no algorithm is required at all because the *Katz* exception applies (Dkt. #43 at p. 3 n.2 (citing *In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1316 (Fed. Cir. 2011))).

2. Analysis

Title 35 U.S.C. § 112(f) (formerly § 112, ¶ 6) provides: "An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C. § 112(f).

> The first step in the construction of a means-plus-function claim element is to identify the particular claimed function. *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999). The second step in the analysis is to look to the specification and identify the corresponding structure for that function. *Id.* Under this second step, "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *B. Braun Med. Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997).

Med. Instrumentation & Diagnostics Corp. v. Elekta AB, 344 F.3d 1205, 1210 (Fed. Cir. 2003).

The first step is thus the "determination of the meaning of the words used to describe the claimed function, if such meaning is in dispute." *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1479 (Fed. Cir. 1998). Claim 1 of the '524 Patent recites:

> 1. An illumination lighting device comprising
>
> a plurality of illumination groups, each of said illumination groups containing one or more light emitting diodes and being configured for passing between an energized light emitting state and a non-energized state, and
>
> *control means for maintaining the luminosity of the lighting device at a desired level, said luminosity being controlled by, at predetermined time intervals, transferring an appropriate number of illumination groups between said energized light emitting state and said non-energized state,*
>
> whereby
>
> *said transfer is effected in response to a luminosity reading and/or a usage time measurement*, and
>
> said lighting device comprises at least one of usage time measuring means for providing a usage time measurement for each of said illumination groups at predetermined time intervals, and
>
> a luminosity measuring system comprising
>
> i) luminosity measuring means,
>
> ii) one or more test light emitting diodes equivalent to the light emitting diodes of said plurality of illumination groups,
>
> said luminosity measuring means being able to provide said luminosity reading at predetermined time intervals, on the basis of the light of said one or more test light emitting diodes when said one or more test light emitting diodes are in an energized state, wherein said one or more test light emitting diodes are selected from among light emitting diodes which are part of said illumination groups and which are separate from said illumination groups.

'524 Patent at 23:20–51 (emphasis added).

The claim recites that the function of the "control means" is to maintain the luminosity of the lighting device at a desired level by, at predetermined time intervals, transferring an appropriate number of illumination groups between said energized light emitting state and said non-energized state in response to a luminosity reading and/or a usage time measurement. Defendant has not adequately justified its proposed modification of this claim language, particularly as to Defendant's proposals of "electrical current" and "predetermined level."

As for the proper corresponding structure, the parties agree that the corresponding structure includes microprocessor 80. For example, the specification discloses:

> The microprocessor 80 is set to control the lighting device, and is in this embodiment of the invention a controller means.

'524 Patent at 10:65–67.

Plaintiff has also cited disclosure regarding a "host computer" that "control[s] important global aspects of the lighting system, such as the lighting intensity in specific zones of the system as a function of the time-of-day and/or ambient illumination, gradual dimming of lighting intensity in intensity level transitions, and activation of special functions such as integrated lane use signals." *Id.* at 21:9–14; *see id.* at 21:1–22:37. However, these disclosures regarding a "host computer" relate to controlling multiple lighting devices, such as in a roadway tunnel, and are not "clearly link[ed] or associate[d]" with the above-discussed claimed function of maintaining the luminosity of a particular lighting device. *Med. Instrumentation*, 344 F.3d at 1210. In other words, the specification does not clearly link the claimed function to "[t]he network linking of a number of lighting devices with a host computer." '524 Patent at 21:6–7; *see id.* at 4:53–62 (disclosing "manipulating the light intensity in a tunnel"); *see also Triton Tech of Tex., LLC v. Nintendo of Am., Inc.*, 753 F.3d 1375, 1378 (Fed. Cir. 2014) ("In exchange for using this form of claiming, the patent specification must disclose with sufficient particularity the corresponding

structure for performing the claimed function and *clearly link* that structure to the function." (emphasis added)); *cf. ACCO Brands, Inc. v. Micro Sec. Devices, Inc.*, 346 F.3d 1075, 1079 (Fed. Cir. 2003) ("The presence in the . . . specification of embodiments carried over from the parent application, but claimed in other patents, does not serve to broaden the scope of the . . . claims that were the subject of the divisional application."). In addition, these disclosures relate to varying luminosity rather than maintaining it. *See, e.g.*, '524 Patent at 21:25–27 ("Because it has individual control over each lighting device, the host computer can vary the intensity level for each specific zone of the lighting area."); *id.* at 4:53–62.

Because the specification links the claimed function to a general-purpose processor, namely microprocessor 80 as discussed above, an algorithm is required. *See, e.g.*, *Net MoneyIN Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1367 (Fed. Cir. 2008) ("Thus, in a means-plus-function claim 'in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm.'" (quoting *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999))). Plaintiff has not demonstrated that the *Katz* exception applies because the claimed function of maintaining luminosity is not a function that could be performed by any general-purpose computer without special programming. *See In re Katz*, 639 F.3d at 1316 ("Absent a possible narrower construction of the terms 'processing,' 'receiving,' and 'storing,' . . . those functions can be achieved by any general purpose computer without special programming.").

The specification discloses, in the context of determining the number of extra LED groups needed, an algorithm for adjusting the number of LED groups that are turned on:

> The number of extra groups is determined as follows, using this set of definitions:

> L_{tot}=Total Luminosity of the lighting device
>
> N_{on}(t)=Number of groups turned On (as a function of time) to maintain constant L_{tot}
>
> L_{led}(t)=Luminosity (as a function of usage time) for a typical LED
>
> t_{elc}=End-of-Life-Cycle time
>
> n_{led}=Number of LEDs per group
>
> N_{start}=Number of LED groups needed at life-cycle startup (t=0)
>
> N_{extra}=Number of extra groups needed to maintain Total Luminosity L_{tot} at End-of-Life-Cycle time t_{elc}
>
> N_{group}=Total number of groups in lighting device
>
> At any given time, the microprocessor monitors L_{led}(t) through the monitor LEDs. It then adjusts the number N_{on}(t) of groups turned On so that the Total Luminosity L_{tot} of the lighting device remains constant, according to the following relation:
>
> $L_{tot}=N_{on}(t)*n_{led}*L_{led}(t)$
>
> From which is obtained:
>
> $N_{on}(t)=L_{tot}/\{n_{led}*L_{led}(t)\}$

'524 Patent at 13:3–25.

Nonetheless, the above-reproduced claim language recites that determining which illumination groups should be energized and which should be non-energized can be based on "a luminosity reading *and/or* a usage time measurement." Thus, the above-disclosed L_{led}(t), which is "Luminosity (as a function of *usage time*) for a *typical* LED," amounts to a prospective estimate and is only one of two alternatives. The other alternative is to measure actual luminosity while in use:

> The light intensity-measuring device 102 coupled to the test LEDs 101 is read by the controller means. By comparing the test intensity to a reference value, the calculation means can estimate the LED luminosity variations at any given moment and compensate by adjusting the number of LEDs groups turned ON, thereby regularizing the overall lighting device luminosity.
>
> The comparison to the reference values can be seen in FIG. 5, reference number 180. The test intensities L1 and L2 are measured in 176 and 178. These values are then compared to reference values Lr1 and Lr2 which are set during the calibration of the lighting device (154, 156, 158). The LED degradation factor FI is calculated using the following formula FI=((L1/Lr1)+(L2/Lr2))/2. As can be seen from the formula the LED degradation factor is averaged over the test diodes such that in the case of abnormal behaviour in one test LED the results will not be completely skewed.

Id. at 15:5–21; *see id.* at 14:40–15:4.

Both alternatives, however, assume that usage time is spread evenly across all illumination groups so that all of the LEDs of the illumination groups experience substantially the same degradation over time. *See id.* at 13:3–25 ("L_{led}(t)=Luminosity (as a function of usage time) for a typical LED"). This is necessary so that all illumination groups generate approximately the same luminosity when turned on, and as a result, the illumination groups are essentially interchangeable for purposes of contribution to the total luminosity, L_{tot}. *Id.* The specification thus describes "rotation of the LED groups turned On." *Id.* at 13:60–14:4; *see id.* at 16:22–41 ("Automatic LED Usage Equalization").

The Court therefore finds that **"control means for maintaining the luminosity of the lighting device at a desired level"** is a means-plus-function term. The claimed function is **"maintaining the luminosity of the lighting device at a desired level by, at predetermined time intervals, transferring an appropriate number of illumination groups between said energized light emitting state and said non-energized state in response to a luminosity reading and/or a usage time measurement,"** and the corresponding structure is **"microprocessor 80 configured to perform the algorithms set forth in the '524 Patent at column 16, lines 22–41, and: (1) column 13, lines 17–25, and/or (2) column 15, lines 5–21; and equivalents thereof."**

B. "equivalent to the light emitting diodes of said plurality of illumination groups"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
No construction needed. However, if the Court finds construction necessary, then "having approximately equal luminosity as one or more of the light emitting diodes of said plurality of illumination groups."	"having equal luminosity as the light emitting diodes of said plurality of illumination groups"

(Dkt. #30, Exhibit A at pp. 2–3; Dkt. #35 at p. 7; Dkt. #38, App'x A at p. 6; Dkt. #40 at p. 23). The parties submit that this term appears in Claim 1 (Dkt. #30, Exhibit A at pp. 2–3; Dkt. #38, App'x A at p. 6).

1. The Parties' Positions

Plaintiff argues that no construction is necessary and urges that Defendant's proposal of "equal" is "overly narrow" because Defendant "cannot identify any lexicography, disclaimer, or disavowal" (Dkt. #35 at p. 7).

Defendant responds that "Plaintiff points to no disclosure—and there is none—of test LEDs 'approximately identical' to illumination groups' LEDs" (Dkt. #40 at p. 22). Defendant urges that "'equivalent to' here means that . . . each test LED is 'identical' to each LED within the illumination groups—i.e., having the same luminosity" (Dkt. #40 at pp. 23–24). Further, for to Plaintiff's proposal of "one or more," Defendant argues that "[t]he claim and specification state that each test LED is 'equivalent' to each illumination group LED" (Dkt. #40 at p. 24).

2. Analysis

Claim 1 of the '524 Patent recites, in relevant part:

> a luminosity measuring system comprising
> i) luminosity measuring means,
> ii) one or more test light emitting diodes *equivalent* to the light emitting diodes of said plurality of illumination groups.

’524 Patent at 23:38–42. The specification discloses using “test LEDs” that are “identical to the LEDs used in the groups”:

> For the long term degradation compensation of the lighting device to be effective it is important that the calculation means has an accurate idea of the current luminosity output of the LED groups. Therefore, in addition to the LED groups, this system will use *one (or more) test LED* 101 opto-coupled to a light intensity-measuring device 102, as shown in FIG. 4. The light intensity measuring devices 102 can be for instance photodiodes or any appropriate light sensor. When desired the light intensity-measuring devices 102 can *measure the luminosity output of the test LEDs 101, and obtain a standard luminosity for the LEDs of the lighting device.*
>
> The test LEDs 101 will be *identical* to the LEDs used in the groups, supplied with the same constant current, kept at the same temperature as the group LEDs, and turned On and Off in such a way as to maintain or reflect the same or analogous long-term usage rate as the group LEDs, as described below.

Id. at 14:40–55 (emphasis added); *see id.* at Fig. 4.

Whereas the specification uses the word “identical,” the disputed term recites “equivalent.” The parties have submitted an extrinsic dictionary definition of “equivalent” as meaning: “corresponding or *virtually identical* especially in effect or function” (Dkt. #35, Exhibit B, *Merriam–Webster’s Deluxe Dictionary* 616 (10th ed. 1998) (emphasis added); Dkt. #40, Exhibit 10 (same)). This evidence suggests that the word “equivalent” is somewhat broader than “identical,” which is the word used in the specification as quoted above. ’524 Patent at 14:51. Here, the word “substantially” is appropriate because “[t]he term ‘substantial’ is a meaningful modifier implying ‘approximate,’ rather than ‘perfect.’” *Liquid Dynamics Corp. v. Vaughan Co.*, 355 F.3d 1361, 1368 (Fed. Cir. 2004). At the June 15, 2017 hearing, Plaintiff agreed that using “substantially” is a fair interpretation of the word “equivalent” as recited in the present disputed term.

Finally, the parties appeared to agree at the June 15, 2017 hearing that the disputed term refers to equivalence between *each* test LED and *each* of the light emitting diodes of the

illumination groups. Although Plaintiff's alternative proposed construction appears to suggest otherwise, Plaintiff has not presented any argument to support one test LED being equivalent to a group of illumination LEDs rather than one illumination LED. *See* Dkt. #35 at pp. 7–8.

The Court therefore construes **"equivalent to the light emitting diodes of said plurality of illumination groups"** to mean **"each test LED has luminosity substantially equal to that of each of the light emitting diodes of said plurality of illumination groups."**

C. "illumination groups"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
No construction needed. However, if the Court finds construction necessary, then "one or more light emitting diodes"	"a collection of one or more light emitting diodes connected to a current source providing a single current level"

(Dkt. #30, Exhibit A at p. 4; Dkt. #35 at p. 8; Dkt. #38, App'x A at p. 1; Dkt. #40 at p. 16). The parties submit that this term appears in Claims 1, 12, and 15 (Dkt. #30, Exhibit A at p. 4; Dkt. #35 at p. 8; Dkt. #38, App'x A at p. 1).

1. The Parties' Positions

Plaintiff argues that "[n]o construction for this term is necessary because its plain and ordinary meaning is clear," and "Dialight cannot identify any lexicography, disclaimer, or disavowal" (Dkt. #35 at p. 8). Alternatively, Plaintiff argues that Defendant's proposed construction "improperly imports limitations into the claims" and "is inconsistent with the doctrine of claim differentiation" (Dkt. #35 at p. 8).

Defendant responds that the claims and the specification contemplate that illumination groups either can be only on or off, that is, "energized" or "non-energized" (Dkt. #40 at pp. 16–17).

2. Analysis

Plaintiff has argued claim differentiation as to dependent Claim 4 of the '524 Patent. Claim 4 depends from Claim 2, which in turn depends from Claim 1. Claims 1, 2, and 4 recite, in relevant part:

> 1. An illumination lighting device comprising
>
> a plurality of *illumination groups*, each of said *illumination groups* containing one or more light emitting diodes and being configured for passing between an energized light emitting state and a non-energized state, ...
>
> 2. A lighting device as claimed in claim 1 wherein said controller means further comprises: means for detecting whether any of said illumination groups of light emitting diodes have a light emitting diode unable to pass between said energized light emitting state and said non-energized state, and for transferring a so detected group to a nonfunctional state.
>
> . . . .
>
> 4. A lighting device as claimed in claim 2 wherein for the energization of light emitting diodes, said device comprises *constant current* source means.

'524 Patent at 23:20–24, 23:52–59, 23:63–65 (emphasis added).

Because Defendants' proposal of a "single current level" essentially appears as the "constant current" limitation in dependent Claim 4, the doctrine of claim differentiation weighs against Defendant's proposal of "a current source providing a single current level." *See Phillips*, 415 F.3d at 1315 ("[T]he presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.").

Applying the doctrine of claim differentiation to the present disputed term is also consistent with the specification, which discloses:

> While in this embodiment the current source 70 is a constant current source, *it could also be a variable current source*. A variable current source has certain advantages in that it could be used to implement a long term LED degradation compensation system in which the current source could supply more power to compensate for lower output by the LEDs over time.

'524 Patent at 11:33–39 (emphasis added).

Defendant argues that the claim differentiation presumption is rebutted here because the specification does not provide sufficient disclosure regarding any "variable" current source (Dkt. #40 at p. 17). However, Defendant has not demonstrated that the patentee limited the current source to a constant current source or that a person of ordinary skill in the art would find such a limitation apparent or inherent.

Finally, Defendant has noted that the Background of the Invention discusses disadvantages of "current control" disclosed in other patents:

> Certain patents, such as U.S. Pat. No. 6,236,331 B1 Dussurealt, U.S. Pat. No. 6,153,985 Grossman, and U.S. Pat. No. 5,783,909 Hochstein, propose to compensate for long term LED degradation through a variable current. In these lighting devices, which deal mostly with traffic lights, the luminosity output of traffic lights using LEDs is stabilized by varying the current flow. The lighting devices measure the luminosity output of the LEDs and either increase or decrease the current being supplied to the LEDs as a result. The current control is usually performed either through proportional DC (Direct Current) control, or through PWM (Pulse Width Modulation) of the LED supply. In the context of roadway or tunnel lighting, *the use of PWM to control the LED intensity may be problematic*. This is because it can lead to visible stroboscopic beat effects in the light superposition of multiple lighting devices each having slightly different, non-synchronized PWM frequencies.

'524 Patent at 1:66–2:15 (emphasis added). Of note, the patentee here focused on pulse width modulation as being potentially "problematic." In any event, Defendant has not demonstrated that the above-reproduced passage gives rise to any disclaimer or otherwise overrides the doctrine of claim differentiation.

The Court therefore expressly rejects Defendant's proposed construction. No further construction is necessary, particularly in light of the context provided by surrounding claim language. *See U.S. Surgical*, 103 F.3d at 1568 ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an

obligatory exercise in redundancy."); *see also O2 Micro*, 521 F.3d at 1362 ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims."); *Summit 6, LLC v. Samsung Elecs. Co., Ltd.*, 802 F.3d 1283, 1291 (Fed. Cir. 2015) (determining "the district court did not err by declining to construe" a claim term").

Accordingly, the Court construes **"illumination groups"** to have its **plain meaning**.

D. "illumination lighting device" / "lighting device"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
No construction needed. However, if the Court finds construction necessary, then "one or more illumination lighting devices / lighting devices, or a system of one or more illumination lighting devices / lighting devices."	"a sign, display, or light fixture"

(Dkt. #30, Exhibit A at p. 5; Dkt. #35 at p. 10; Dkt. #38, App'x A at p. 1; Dkt. #40 at p. 29). The parties submit that this term appears in Claims 1, 6, 12, 14, 15, and 17. (Dkt. #30, Exhibit A at p. 5; Dkt. #38, App'x A at p. 1).

1. The Parties' Positions

Plaintiff argues that these disputed terms "are not claim limitations, but are instead phrases appearing in the preambles of claims" (Dkt. #35 at p. 10). Alternatively, Plaintiff argues that "[t]he doctrine of claim differentiation, the '524 Patent's specification, and the prosecution history make clear Dialight's proposed construction is wrong" (Dkt. #35 at p. 10).

Defendant responds that "[t]he intrinsic record is abundantly clear that the 'lighting device' is not, itself, a communication network or system *of lighting devices*" (Dkt. #40 at p. 29). Likewise, Defendant argues that "a communication network or system of lighting devices (e.g., of light fixtures) is not, itself, a 'lighting device'" (Dkt. #40 at p. 30).

2. Analysis

Although Plaintiff argues that these disputed terms are not limiting because they appear in the preambles, this argument appears to be irrelevant here because the body of Claim 1 recites "the lighting device" and "said lighting device." Because the preamble of Claim 1 recites only "An illumination lighting device comprising," there does not appear to be any dispute as to whether the preamble recites additional limiting details.[2] The only real dispute, then, is whether the recited "lighting device" is limited to being "a sign, display, or light fixture."[3]

Plaintiff has argued claim differentiation as to dependent Claim 21, which depends from Claim 1. Claims 1 and 21 recite, in relevant part:

> 1. An illumination lighting device comprising
>
> a plurality of illumination groups, each of said illumination groups containing one or more light emitting diodes and being configured for passing between an energized light emitting state and a non-energized state, and
>
> control means for maintaining the luminosity of *the lighting device* at a desired level, said luminosity being controlled by, at predetermined time intervals, transferring an appropriate number of illumination groups between said energized light emitting state and said non-energized state,
>
> whereby
>
> said transfer is effected in response to a luminosity reading and/or a usage time measurement, and
>
> *said lighting device* comprises at least one of usage time measuring means for providing a usage time measurement for each of said illumination groups at predetermined time intervals, and
>
> a luminosity measuring system comprising
>
> i) luminosity measuring means,
>
> ii) one or more test light emitting diodes equivalent to the light emitting diodes of said plurality of illumination groups,
>
> said luminosity measuring means being able to provide said luminosity reading at predetermined time intervals, on the basis of the light of said one or more test light emitting diodes when said one or more test light emitting diodes are in an energized state, wherein said one or more test light emitting diodes are

[2] Claim 26 (which does not appear to be asserted in the present case) similarly begins with "[a] lighting device comprising."

[3] In denying Defendant's Motion for Judgment on the Pleadings and to Dismiss the Complaint with Prejudice (Dkt. #10), the Court stated: "In terms of whether the 'illumination lighting device' should be construed as ['a sign, display, or light fixture,' the Court will not engage in claim construction at this stage." (Dkt. #32 at p. 5).

> selected from among light emitting diodes which are part of said illumination groups and which are separate from said illumination groups.
>
> . . . .
>
> 21. A lighting device as claimed in claim 1 wherein said lighting device is a *single* device.

'524 Patent at 23:20–42, 24:56–57 (emphasis added).

Claim 21 limits Claim 1 such that "said lighting device is a single device," but the relevance of this to the present dispute is unclear. For example, the present dispute is not whether Claim 1 is limited to a single "lighting device." Instead, the dispute is whether multiple light fixtures can together amount to the recited "lighting device." In other words, the parties dispute whether all of the limitations of the recited "lighting device" must be satisfied by a single light fixture. The recital of a "single device" in Claim 21 offers limited probative value because the phrase "single device" does not necessarily connote a single physical object (as opposed to a collection of physically separate components).

In terms of the prosecution history, Plaintiff has argued as a threshold matter:

> [T]he presumption that claim 1 covers multiple devices, or a system or network of devices, is reinforced by FIG. 12, which clearly shows a "multiple device" or "system of devices" embodiment of invention. FIG. 12 was cited in support of the amendment adding dependent claim 21. Under the doctrine of claim differentiation, claim 21's recitation of a 'single device' makes clear that claim 1 includes more than one device, display sign, or light fixture.

(Dkt. #35 at p. 15).[4] The prosecution history cited by Plaintiff refers to "element 1" in Figures 1, 2, and 12 (Dkt. #35, Exhibit D, Nov. 18, 2008 Response at p. 10 ("For support for claims 29, 33, 37 and 41 please see figs 1, 2 and 21 (element 1).")).[5] This "element 1" is "lighting device 1,"

[4] As discussed above, the significance of Claim 21 in this regard is less than clear.

[5] The Court assumes for the sake of argument that Plaintiff is correct that the reference to "Figure 21" in the cited prosecution history was an inadvertent transposed reference to Figure 12. In addition, Plaintiff submits that "[i]ssued dependent claim 21 corresponds to pending claim 29, which was renumbered prior to issuance" (Dkt. #35 at p. 14 n.4).

and Figure 12 illustrates multiple such lighting devices without any indication that the multiple lighting devices can together constitute a single "lighting device."

Defendant has focused on restriction requirements during prosecution and the patentee's election in response thereto. The examiner issued restriction requirements between (among other groups) claims "drawn to a lighting device having controller means for controlling groups of LEDs" ("Group I") and claims "drawn to a computer network controlling the status of LED lighting devices" ("Group III") (Dkt. #40, Exhibit 2, June 22, 2004 Office Action at p. 2; Dkt. #40, Exhibit 3, Oct. 19, 2007 Office Action at p. 2). The examiner explained:

> In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because Group I addresses a lighting device with controller means controlling the energized or non-energized light emitting state of LEDs upon a standard luminosity reading or usage time measurement whereas Group Ill addresses a computer network determining the status of a plurality of LED lighting devices.

(Dkt. #40, Exhibit 2, June 22, 2004 Office Action at pp. 2–3; Dkt. #40, Exhibit 3, Oct. 19, 2007 Office Action at p. 2).

The patentee responded by electing Group I, namely the "lighting device" claims (Dkt. #40, Exhibit 2, Sept. 22, 2004 Response to Restriction Requirement at p. 6; Dkt. #40, Exhibit 3, Apr. 15, 2008 Response to Restriction Requirement at p. 6). Defendant concludes that as a result, the elected claims cannot encompass the non-elected "computer network." During claim construction, however, an examiner's restriction requirement offers limited probative weight:

> We . . . do not assign much weight to the patent examiner's restriction requirement with respect to claims for a "fuel filter" and a "fuel system component" during prosecution of the . . . application. In making the restriction requirement, the examiner did not construe the claim term "fuel system component" or determine its meaning in light of the written description. He merely required that the applicant elect one aspect of his invention for prosecution without applying it to the specification.

Honeywell Int'l, Inc. v. ITT Indus., Inc., 452 F.3d 1312, 1319 (Fed. Cir. 2006); *see Colorquick, LLC v. Eastman Kodak Co.*, No. 6:06-CV-390, 2008 WL 5771324, at *10 (E.D. Tex. June 25, 2008) ("[A]s noted by the significant number of other courts refusing to use restriction requirements to limit the claims during claim construction, a restriction requirement is an administrative tool, and therefore offers little guidance in construing the claim language."); *see also Bestop, Inc. v. Tuffy Sec. Prods., Inc.*, No. 13-10759, 2015 WL 470552, at *6 (E.D. Mich. Feb. 4, 2015) ("Absent applicant argument in the face of a restriction requirement, however, the courts have consistently refused to find an examiner's restriction requirement, by itself, to result in a disavowal of claim scope.").

Defendant has cited authority holding that "a patent applicant's response to a restriction requirement may be used to interpret patent claim terms or as a source of disclaimer." *Uship Intellectual Props., LLC v. United States*, 714 F.3d 1311, 1315 (Fed. Cir. 2013); *see Rambus Inc. v. Infineon Techs. AG*, 318 F.3d 1081, 1095 (Fed. Cir. 2003) (finding that a restriction requirement characterizing what each group of claims did *not* require demonstrated that a particular element was *not* required by the elected claims).

Here, the patentee did not characterize the scope of the "lighting device" claims when electing Group I, and the examiner did not state that Group I necessarily excludes a network or collection (Dkt. #40, Exhibit 2, June 22, 2004 Office Action at pp. 2–3; Dkt. #40, Exhibit 3, Oct. 19, 2007 Office Action at p. 2). Therefore, the prosecution history cited by Defendant does not carry significant weight in resolving the parties' claim construction dispute.

Turning to the specification, Plaintiff has cited various disclosures regarding controlling a "plurality of lighting devices." '524 Patent at 4:53–62; *see id.* at 7:46–49 (disclosing "multiple lighting devices" and "a great number of lighting devices"); *id.* at 8:54–56 (disclosing "a series

of identical lighting devices"); *id.* at 21:6–14 (disclosing a "network linking of a number of lighting devices with a host computer"); *see also id.* at Fig. 12. These disclosures regarding groups of lighting devices are not significantly probative in resolving whether a particular "lighting device" can be made up of multiple light fixtures.

Likewise, disclosures in the Background of the Invention regarding using "a plurality of LEDs" in a single lighting device do not address the question of whether a particular "lighting device" can be made up of multiple light fixtures. *See, e.g.*, *id.* at 1:39–65. If anything, disclosures in the Background of the Invention weigh in favor of finding that a "lighting device" is an individual light fixture. *See id.* at 2:2–5 ("In these lighting devices, which deal mostly with traffic lights, the luminosity output of traffic lights using LEDs is stabilized by varying the current flow.").

Nonetheless, Defendant has failed to identify any definitive statements in the specification or the prosecution history that would justify requiring "a sign, display, or light fixture." Likewise, no such limitations are apparent in the claims, which themselves do not give rise to any ambiguity in this regard. *See Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) ("The words of a claim are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art when read in the context of the specification and prosecution history. There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.") (citations omitted).

The Court therefore expressly rejects Defendant's proposed construction. No further construction is necessary. *See U.S. Surgical*, 103 F.3d at 1568; *see also O2 Micro*, 521 F.3d at 1362; *Summit 6*, 802 F.3d at 1291.

Accordingly, the Court construes **"illumination lighting device"** and **"lighting device"** to have their **plain meaning**.

E. "luminosity measuring means"

Plaintiff's Proposed Construction	**Defendant's Proposed Construction**
35 U.S.C. § 112, ¶ 6. Function: "measuring luminosity of ambient light, or [one or more] light emitting diodes, or both" Structure: "a light sensor," "ambient illumination sensor," "photodiodes or any appropriate light sensor," or "one or more test light emitting diodes coupled to light sensors, such that said test diodes can emit light which will then be measured by the light sensors," or equivalents thereof	Defendant contends that this phrase is governed by 35 U.S.C. § 112, ¶ 6. Function: "measuring the brightness of one or more test light emitting diodes" Structure: "a photodiode connected to a test light emitting diode by an optocoupler that filters out all outside light as described at Col. 14, ll. 40–50 and Col. 15:46–50, and equivalents thereof"

(Dkt. #30, Exhibit A at p. 9; Dkt. #35 at p. 20; Dkt. #38, App'x A at p. 5; Dkt. #40 at pp. 17–18). The parties submit that this term appears in Claim 1 (Dkt. #30, Exhibit A at p. 9; Dkt. #38, App'x A at p. 5). The parties agree that this term is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6.

1. The Parties' Positions

Plaintiff argues that its proposed corresponding structures are set forth in the specification and linked to the claimed function (Dkt. #35 at pp. 20–21). Plaintiff also argues that Defendant's proposed construction "does not account for the embodiments of the claimed invention where the

luminosity of the lighting device is controlled based, at least in part, on ambient illumination" (Dkt. #35 at p. 21).

Defendant responds that its proposed function is consistent with surrounding claim language and with the specification, both of which refer to measurement of the light intensity of the test light emitting diodes (Dkt. #40 at p. 20). As for the corresponding structure, Defendant argues that "the photodiode and the test LED must be optically coupled—i.e., connected in such a way that outside light is not measured by the photodiode" (Dkt. #40 at p. 20 (footnote omitted)). Defendant urges that "[t]he specification nowhere mentions that an ambient light sensor provides a 'luminosity reading' of one or more test LEDs—the stated function" (Dkt. #40 at p. 21).

2. Analysis

Claim 1 of the '524 Patent recites:

> 1. An illumination lighting device comprising
>
> a plurality of illumination groups, each of said illumination groups containing one or more light emitting diodes and being configured for passing between an energized light emitting state and a non-energized state, and
>
> control means for maintaining the luminosity of the lighting device at a desired level, said luminosity being controlled by, at predetermined time intervals, transferring an appropriate number of illumination groups between said energized light emitting state and said non-energized state,
>
> whereby
>
> said transfer is effected in response to a *luminosity reading* and/or a usage time measurement, and
>
> said lighting device comprises at least one of usage time measuring means for providing a usage time measurement for each of said illumination groups at predetermined time intervals, and
>
> a luminosity measuring system comprising
>
> i) *luminosity measuring means*,
>
> ii) one or more test light emitting diodes equivalent to the light emitting diodes of said plurality of illumination groups,
>
> said *luminosity measuring means* being able to provide said *luminosity reading* at predetermined time intervals, *on the basis of the light of said one or more test light emitting diodes when said one or more test light emitting diodes are in an energized state*, wherein said one or more test light emitting diodes are

> selected from among light emitting diodes which are part of said illumination groups and which are separate from said illumination groups.

'524 Patent at 23:20–42 (emphasis added).

The claim thus expressly requires that the "luminosity measuring means" must measure luminosity of light from one or more test LEDs that are in an energized state. Accordingly, the Court finds that the claimed function for this means-plus-function term is "measuring the luminosity of one or more test light emitting diodes."

Plaintiff has cited disclosures regarding ambient light sensors as purportedly corresponding structure (e.g., the '524 Patent at 21:44 states "ambient illumination sensor at the entrances to the tunnel"), but the claimed function, as construed above, relates to measuring the luminosity of test LEDs and not the luminosity of ambient light. Disclosures regarding ambient light sensors are not "clearly link[ed] or associate[d]" with the claimed function found above. *Med. Instrumentation*, 344 F.3d at 1210; *cf. ACCO Brands*, 346 F.3d at 1079 ("The presence in the . . . specification of embodiments carried over from the parent application, but claimed in other patents, does not serve to broaden the scope of the . . . claims that were the subject of the divisional application.").

As for the proper corresponding structure, the specification discloses "[t]he light intensity measuring devices 102 can be for instance photodiodes or any appropriate light sensor." '524 Patent at 14:46–47; *see id.* at 2:42–46 (mentioning "light sensors"); *see also id.* at 15:5–6 ("The light intensity-measuring device 102 coupled to the test LEDs 101 is read by the controller means."). Also, Figure 4 of the '524 Patent illustrates reference numeral 102 as a "Light Sensor."

Finally, the claim does not recite any limitation to exclude ambient light. This is a specific feature of particular disclosed embodiments that should not be imported into the claims.

See '524 Patent at 15:46–50 ("Each test LED must be optically coupled to a light intensity-measuring device, such as a semiconductor photo-sensor. Furthermore, no outside light must filter in this coupling, so that the intensity measurement accurately reflects the Test LED intensity."); *see also Constant*, 848 F.2d at 1571; *Phillips*, 415 F.3d at 1323.

Likewise, the extrinsic evidence cited by Defendant does not require excluding ambient light. *See* Dkt. #40, Exhibit 8, *The Illustrated Dictionary of Electronics* 488–89 (1997) (defining "optical coupler" as "A coupling device consisting essentially of a light source (actuated by an input signal) mounted in an opaque housing with a light-sensitive device (that delivers the output signal). In its simplest form, the arrangement consists of a light-emitting diode (LED) and a photodiode."). Indeed, one of the dictionary definitions provided by Defendant refers to an "optocoupler" as a special-purpose component designed for providing electrical isolation between systems:

> A solid-state device that provides high electrical isolation by converting the input signal to light emission and reconverting it to an electrical signal. It consists of a photoemitter (such as a light- or infrared-emitting diode—LED or IRED) and a photodetector (such as a phototransistor). Optocouplers prevent the transmission of unwanted noise and provide coupling between systems operating at different voltage levels. It is also called an optoisolator or photocoupler.

(Dkt. #40, Exhibit 9, *McGraw-Hill Electronics Dictionary* 322 (6th ed. 1997)).

The Court therefore finds that **"luminosity measuring means"** is a means-plus-function term. The claimed function is **"measuring the luminosity of one or more test light emitting diodes,"** and the corresponding structure is **"light intensity measuring devices 102, which can be, for example, photodiodes or any appropriate light sensor; and equivalents thereof."**

F. "luminosity reading"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
No construction needed However, if the Court finds construction necessary, then "measurement of the luminosity of ambient light, or one or more light emitting diodes, or both."	"measurement of the brightness of one or more test light emitting diodes"

(Dkt. #30, Exhibit A at p. 10; Dkt. #35 at p. 22; Dkt. #38, App'x A at p. 3; Dkt. #40 at p. 18). The parties submit that this term appears in Claim 1 (Dkt. #30, Exhibit A at p. 10; Dkt. #38, App'x A at p. 3).

1. The Parties' Positions

Plaintiff argues that the plain meaning of this disputed term is clear, and "Defendant cannot identify any lexicography, disclaimer, or disavowal" (Dkt. #35 at p. 22).

Defendant responds that whereas "Plaintiff argues . . . that a 'luminosity reading' includes ambient light or light sources other than test LEDs," "Plaintiff's argument is contradicted by the claims and specification, both of which are clear that what is measured is the brightness of one or more test LEDs" (Dkt. #40 at p. 19).

2. Analysis

Plaintiff's alternative proposal would allow for measuring only ambient light. As previously discussed regarding the related term "luminosity measuring means," Claim 1 of the '524 Patent does not recite any limitation to exclude ambient light, but the claim does require that the "luminosity measuring means" measure luminosity of light from one or more test LEDs that are in an energized state. *See* '524 Patent at 23:43–47 ("[S]aid luminosity measuring means being able to provide said *luminosity reading* at predetermined time intervals, *on the basis of the*

light of said one or more test light emitting diodes when said one or more test light emitting diodes are in an energized state . . . ." (emphasis added)).

Defendant has also submitted extrinsic evidence defining "luminosity" in relevant contexts as referring to "brightness" (Dkt. #40, Exhibit 6, *Random House Webster's Unabridged Dictionary* 1144 (2d ed. 2001) ("[T]he brightness of a light source of a certain wavelength as it appears to the eye, measured as the ratio of luminous flux to radiant flux at that wavelength."); (Dkt. #40, Exhibit 7, *Chambers Dictionary of Science & Technology* 695 (1999) ("The visual perception of the brightness of an area. The density of luminous intensity in a particular direction.")).

At the June 15, 2017 hearing, Defendant reiterated that construing "luminosity" as "brightness" would be helpful to the jury. Plaintiff agreed that the word "brightness" accurately describes how the patentee used the term "luminosity." Thus, "some construction of the disputed claim language will assist the jury to understand the claims." *See TQP Dev., LLC v. Merrill Lynch & Co.*, No. 2:08-CV-471, 2012 WL 1940849, at *2 (E.D. Tex. May 29, 2012).

The Court therefore construes **"luminosity reading"** to mean **"measurement of brightness."**

G. "test light emitting diodes"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
No construction needed. However, if the Court finds construction necessary, then "light emitting diodes having approximately equal luminosity as one or more of the light emitting diodes of said plurality of illumination groups, or the remaining light emitting diodes of said plurality of illumination groups."	"a light emitting diode identical to the light emitting diodes in the illumination groups that is optically coupled to a light intensity measuring device"

(Dkt. #30, Exhibit A at pp. 11–12; Dkt. #35 at p. 23; Dkt. #38, App'x A at pp. 5–6; Dkt. #40 at p. 21). The parties submit that this term appears in Claims 1 and 15. (Dkt. #30, Exhibit A at pp. 11–12; Dkt. #38, App'x A at p. 5).

1. The Parties' Positions

Plaintiff argues that the plain meaning of the term is clear, Defendant has identified no definition or disclaimer, and the meaning of the term is further defined in Claim 1 (Dkt. #35 at p. 23). Alternatively, Plaintiff argues that Defendant's proposed construction "improperly imports limitations from certain embodiments disclosed in the Patent's specification" (Dkt. #35 at p. 24).

Defendant responds that the claim language requires that the "test light emitting diodes" are "*equivalent* to the light emitting diodes of said plurality of illumination groups," and Defendant submits that "[t]he specification *only* discloses test LEDs that are *identical* to the LEDs of the illumination groups" (Dkt. #40 at p. 22).

2. Analysis

The disputed term appears in Claims 1 and 15 of the '524 Patent, which recite:

> 1. An illumination lighting device comprising
>
> . . . .
>
> a luminosity measuring system comprising
>
> i) luminosity measuring means,
>
> ii) one or more *test light emitting diodes* equivalent to the light emitting diodes of said plurality of illumination groups,
>
> said luminosity measuring means being able to provide said luminosity reading at predetermined time intervals, on the basis of the light of said one or more *test light emitting diodes* when said one or more test light emitting diodes are in an energized state, wherein said one or more *test light emitting diodes* are selected from among light emitting diodes which are part of said illumination groups and which are separate from said illumination groups.
>
> . . . .
>
> 15. A lighting device as defined in claim 1, wherein said *test light emitting diodes* are selected from light emitting diodes which are members of said illumination groups.

'524 Patent at 23:20, 23:38–51, 24:34–36 (emphasis added).

Whereas Claim 1 recites that the test LEDs are either among the LEDs of the illumination groups or separate from the illumination groups, Claim 15 specifies that the test LEDs must be selected from among the LEDs of the illumination groups.

Defendant's proposal would improperly import an "identical" limitation from a particular disclosed embodiment. *See* '524 Patent at 14:51–55 ("The test LEDs 101 will be identical to the LEDs used in the groups"); *see also id.* at 15:39–42. Instead, Claim 1 requires only "one or more test light emitting diodes *equivalent* to the light emitting diodes of said plurality of illumination groups." The "equivalent" limitation is a disputed term addressed separately above. Extrinsic dictionary definitions of "equivalent" submitted by the parties weigh against importing an "identical" limitation. *See* Dkt. #35, Exhibit B, *Merriam–Webster's Deluxe Dictionary* 616 (10th ed. 1998) (defining equivalent as "equal in force, amount, or value" and "corresponding or virtually identical especially in effect or function"); *see also* Dkt. #40, Exhibit 6, *Random House Webster's Unabridged Dictionary* 657 (2d ed. 2001) (defining equivalent as "equal in value, measure, force, effect, significance, etc").

Likewise, optical coupling is disclosed in the specification regarding particular preferred embodiments (e.g., the '524 Patent at 14:43–50 states "this system will use one (or more) test LED 101 opto-coupled to a light intensity-measuring device 102, as shown in FIG. 4"), and no such limitation appears in the above-reproduced claims. *See Constant*, 848 F.2d at 1571; *see also Phillips*, 415 F.3d at 1323.

The Court therefore expressly rejects Defendant's proposed construction. No further construction is necessary, particularly in light of the context provided by the above-reproduced claim language reciting the role of test "light emitting diodes" as part of a "luminosity measuring

system." *See U.S. Surgical*, 103 F.3d at 1568; *see also O2 Micro*, 521 F.3d at 1362; *Summit 6*, 802 F.3d at 1291.

Accordingly, the Court construes **"test light emitting diodes"** to have its **plain meaning**.

H. "usage time measurement"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
No construction needed. However, if the Court finds construction necessary, then "the cumulative or non-cumulative amount of time something has been used."	"the cumulative amount of time an illumination group has been illuminated"

(Dkt. #30, Exhibit A at p. 12; Dkt. #35 at p. 25; Dkt. #38, App'x A at p. 4; Dkt. #40 at p. 25). The parties submit that this term appears in Claim 1 (Dkt. #30, Exhibit A at p. 12; Dkt. #38, App'x A at p. 4).

1. The Parties' Positions

Plaintiff argues that the plain meaning of this disputed term is clear, and "Defendant cannot identify any lexicography, disclaimer, or disavowal" (Dkt. #35 at p. 5). Alternatively, Plaintiff argues that Defendant's proposal "improperly reads limitations into the claim and renders one or more claims superfluous" (Dkt. #35 at p. 5). Plaintiff also argues claim differentiation as to dependent Claim 18 (Dkt. #35 at p. 5)

Defendant responds that whereas Plaintiff's alternative proposal is "vague and unhelpful," and "[t]he claim is clear that what is measured is usage time of each illumination group" (Dkt. #40 at p. 26).

2. Analysis

Claims 1 and 18 of the '524 Patent recite:

1. An illumination lighting device comprising

> . . . .
>
> control means for maintaining the luminosity of the lighting device at a desired level, said luminosity being controlled by, at predetermined time intervals, transferring an appropriate number of illumination groups between said energized light emitting state and said non-energized state,
>
> whereby
>
> said transfer is effected in response to a luminosity reading and/or a *usage time measurement*, and
>
> said lighting device comprises at least one of usage time measuring means for providing a usage time measurement for each of said illumination groups at predetermined time intervals, ...
>
> . . . .
>
> 18. A lighting device as claimed in claim 1, wherein said usage time measurement is a *cumulative usage time measurement* for each of said illumination groups of light emitting diodes.

'524 Patent at 23:20, 23:25–36, 24:43–46 (emphasis added).

On one hand, Plaintiff cites the doctrine of claim differentiation, arguing that the "usage time measurement" recited in Claim 1 is not limited to "cumulative" usage time because such a limitation appears in dependent Claim 18. *See Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1233 (Fed. Cir. 2001) ("Claim differentiation, while often argued to be controlling when it does not apply, is clearly applicable when there is a dispute over whether a limitation found in a dependent claim should be read into an independent claim, and that limitation is the only meaningful difference between the two claims."); *see also Phillips*, 415 F.3d at 1315 ("[T]he presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim."). Further, at the June 15, 2017 hearing, Plaintiff cited disclosure that stated, "It should be clear that the controller means can be configured to transfer said groups of light emitting diodes between said first energized groups and said second non-energized group in response to *any suitable criteria*." '524 Patent at 3:56–59 (emphasis added).

On the other hand, construing the disputed term as referring to "cumulative" usage time is consistent with how the specification uses the phrase "usage time":

> For example the controller means could activate test LEDs every time the average cumulative usage time of the lighting LEDs exceeds the cumulative usage time of the test LEDs, and turn the test LEDs off every time the cumulative usage time of the test LEDs is greater than or equal to the cumulative usage time of the lighting LEDs.

'524 Patent at 14:66–15:4. Admittedly, these disclosures of "cumulative usage time" could be read as implying that "usage time" is not necessarily cumulative. *Cf. Phillips*, 415 F.3d at 1314 ("[T]he claim in this case refers to 'steel baffles,' which strongly implies that the term 'baffles' does not inherently mean objects made of steel.").

Yet, the specification repeatedly refers to "usage time" in like manner without specifying "cumulative." *See* '524 Patent at 15:39–42 ("In order to provide an accurate picture of the lighting device's lighting LEDs state, the test LEDs must operate under identical conditions: same junction current, same temperature, same *usage time*." (emphasis added)); *see also id.* at 16:23–29 (indicating the memory means "will keep count of the usage time of each of the LEDs group in the LED Array"); *id.* at 16:31–32 (indicating the partitioning means "prioritize the use of LEDs groups having the shortest usage time"); *id.* at 16:35 ("sort[ing] the LED groups by usage time").

Claim 1 recites the disputed term in the context of a "control means for maintaining the luminosity of the lighting device at a desired level." For the usage time to be useful in this context, the usage time must be cumulative. *See id.* at 10:23–24 ("LED output gradually decreases with usage time."); *id.* at 13:8–9 ("L_{led}(t)=Luminosity (as a function of usage time) for a typical LED"). Plaintiff's proposal of encompassing "non-cumulative" usage time, by contrast, would encompass any arbitrary time measurement. For example, Plaintiff's proposal would

encompass "time of day" luminance adjustments as well as "ramping" of such adjustments. *See id.* at 21:33–63. The disclosures that refer to control of multiple lighting devices by a "host computer" do not refer to measuring any "usage" time. Plaintiff's extrinsic dictionary definition of "operating time" ("[t]he interval during which an equipment is in operation") does not compel finding otherwise (Dkt. #35, Exhibit J, *The Illustrated Dictionary of Electronics* 488 (7th ed. 1997)).

The great weight of the intrinsic evidence, as provided by the context of the claim, as disclosures in the specification, and as discussed above, demonstrate that the doctrine of claim differentiation is rebutted for the present disputed term. *See Howmedica Osteonics Corp. v. Zimmer, Inc.*, 822 F.3d 1312, 1323 (Fed. Cir. 2016) ("[C]laim differentiation is a rebuttable presumption that may be overcome by a contrary construction dictated by the written description or prosecution history"); *N. Am. Vaccine, Inc. v. Am. Cyanamid Co.*, 7 F.3d 1571, 1577 (Fed. Cir. 1993) ("While it is true that dependent claims can aid in interpreting the scope of claims from which they depend, they are only an aid to interpretation and are not conclusive. The dependent claim tail cannot wag the independent claim dog."); *see also Wi-LAN USA, Inc. v. Apple Inc.*, 830 F.3d 1374, 1382 (Fed. Cir. 2016) ("Consistent use of a term in a particular way in the specification can inform the proper construction of that term."); *Nystrom v. TREX Co.*, 424 F.3d 1136, 1144 (Fed. Cir. 2005) (noting "context maintained throughout the written description").

The Court therefore construes **"usage time measurement"** to mean **"cumulative amount of time in use."**

I. "usage time measuring means for providing a usage time measurement for each of said illumination groups at predetermined time intervals"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
35 U.S.C. § 112, ¶ 6. Function: "providing usage time measurement" Structure: "Software and hardware which keeps track of time", as described in '524 Patent, 12:28–29; 2:55–58; 16:26–29; and 12:17–19; or equivalents thereof.	Defendant contends that this phrase is governed by 35 U.S.C. § 112, ¶ 6. Function: "counting, storing, and providing the cumulative amount of time that each illumination group and test light emitting diode have been illuminated" Structure: "a microprocessor including a counter and a memory as described at Col. 2, ll. 55–58, Col. 14, ll. 56–65, and Col. 16, ll. 23–29 and equivalents thereof"

(Dkt. #30, Exhibit A at p. 13; Dkt. #35 at pp. 26–27; Dkt. #38, App'x A at p. 4; Dkt. #40 at p. 25). The parties submit that this term appears in Claims 1, 6, and 17 (Dkt. #30, Exhibit A at p. 13; Dkt. #38, App'x A at p. 4). The parties agree that this is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6.

1. The Parties' Positions

Plaintiff argues that Defendant's proposed construction "does not account for the embodiments of the claimed invention wherein the time is a non-cumulative usage time" (Dkt. #35 at p. 27).

Defendant responds that "the claims and specification state that 'providing a usage time measurement' means to 'count and store the cumulative usage time during which each LED group is activated'" (Dkt. #40 at p. 27). As for corresponding structure, Defendant argues that "[i]t is unclear exactly what Plaintiff refers to by 'software and hardware which keeps track of

time," and Defendant urges that "time of day" software does not relate to measurement of "usage" time (Dkt. #40 at p. 28).

2. Analysis

For the reasons discussed above regarding the constituent term "usage time measurement," the claimed function for the "usage time measuring means" is "providing a cumulative amount of time in use for each of said illumination groups at predetermined time intervals." Defendant additionally proposes requiring "counting" and "storing," but while such functions may perhaps be inherent in the structures that correspond to the recited function of "providing," those other functions are not themselves part of the claimed function. *See* '524 Patent at 14:56–58 ("[T]he lighting device has a controller means to count and store the cumulative usage time during which each LED group is activated . . . ."); *see also Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999) (finding that district court erred by "incorporating unrecited functional limitations into the claims").

As for the corresponding structure, the parties appear to agree the structure requires a processor, memory, and a counter or timer. *See* '524 Patent at 12:17–19 ("[T]he lighting device contains a non-volatile memory 140, which can be used to store various information which the microprocessor 80 needs to perform its function."); *id.* at 16:26–29 ("The memory means 140 shown in FIG. 4, will keep count of the usage time of each of the LEDs group in the LED Array, and store these individual usage time values."). The specification links the claimed function to the microprocessor 80, non-volatile memory 140, and a software method that keeps track of time:

> The microprocessor 80 shown in FIG. 4, implements several useful functions for the lighting device. In addition to the energizing means which aids in the variable dimming capacity and control of the LED groups, the microprocessor 80 has several means which allows the lighting device to compensate for long-term

luminosity degradation. These means are *timer means which is a software method which keeps track of time*.

Id. at 12:23–29 (emphasis added); *see id.* at 12:17–19, 16:26–29.

The Court therefore finds that **"usage time measuring means for providing a usage time measurement for each of said illumination groups at predetermined time intervals"** is a means-plus-function term. The claimed function is **"providing a cumulative amount of time in use for each of said illumination groups at predetermined time intervals,"** and the corresponding structure is **"microprocessor 80, non-volatile memory 140, and a software method that keeps track of time; and equivalents thereof."**

J. "wherein said one or more test light emitting diodes are selected from among light emitting diodes which are part of said illumination groups and which are separate from said illumination groups"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
"wherein said one or more test light emitting diodes are selected from the group consisting of: diodes which are part of said illumination groups, and diodes which are separate from said illumination groups" This is a *Markush*-type claim element.	"wherein said luminosity measuring means chooses and isolates one or more test light emitting diodes for measurement, the one or more test light emitting diodes to be measured being either part of said illumination groups or separate from said illumination groups"

(Dkt. #30, Exhibit A at pp. 15–16; Dkt. #35 at p. 28; Dkt. #38, App'x A at pp. 6–7; Dkt. #40 at p. 24). The parties submit that this term appears in Claim 1 (Dkt. #30, Exhibit A at pp. 15–16).

1. The Parties' Positions

Plaintiff argues that the Court should reject Defendant's proposed construction because "neither the claims nor the specification state that the luminosity measuring means 'chooses and isolates' anything" (Dkt. #35 at p. 28). Plaintiff submits that "the term 'selected' is a mode of expression that refers to the fact that the test LEDs may comprise LEDs selected from the group

consisting of (a) LEDs that are a part of said illumination groups, and (b) LEDs which are separate from said illumination groups" (Dkt. #35 at p. 29). Plaintiff also argues claim differentiation between Claim 1 and Claims 15 and 16 (Dkt. #35 at p. 29).

Defendant responds that the term "selected" requires that a particular LED is "chosen and isolated—preventing its light from escaping the device—to accurately measure its brightness" (Dkt. #40 at p. 24). Defendant argues that "Plaintiff's interpretation of 'selected' renders this word entirely meaningless—there is no 'selection' at all under Plaintiff's definition" because "*every* LED must either be part of or separate from an illumination group" (Dkt. #40 at p. 25).

Plaintiff replies by reiterating that "the term 'selected' is clearly a mode of expression, a linguistic patent drafting tool, used to denote or invoke a *Markush*-style alternative claim format" and "is *not* a function or operation performed by the lighting device or any of its components" (Dkt. #43 at p. 5).

2. Analysis

As a threshold matter, Plaintiff has argued claim differentiation for dependent Claims 15 and 16, but Plaintiff has not shown how Defendant's proposed construction would be inconsistent with claim differentiation. Rather, Plaintiff's main argument is the word "selected" sets forth a *Markush* group, that is, a group of alternatives. *See Multilayer Stretch Cling Film Holdings, Inc. v. Berry Plastics Corp.*, 831 F.3d 1350, 1357 n.2 (Fed. Cir. 2016) (discussing common usage of the phrase "selected from the group consisting of" to signal a *Markush* group, but noting that "[n]o precise linguistic formula is required to create a Markush claim").

Plaintiff thus appears to argue that the word "selected" does not constitute an active limitation, such as Defendant's proposal of "chooses and isolates," which would interpret the word "selected" as requiring a specific type of device configuration.

The specification discloses an embodiment in which optical isolation is used between a test LED and a sensor:

> In order to provide an accurate picture of the lighting device's lighting LEDs state, the test LEDs must operate under identical conditions: same junction current, same temperature, same usage time.
>
> The most direct way to accomplish this is simply to use some of the lighting LEDs as test LEDs. However this has the following drawbacks:
>
> *Each test LED must be optically coupled to a light intensity-measuring device*, such as a semiconductor photo-sensor. Furthermore, *no outside light must filter in this coupling*, so that the intensity measurement accurately reflects the Test LED intensity. Such a coupling + photo-sensor assembly can take a substantial amount of physical space in front of the Test LED (typically at least one inch). Using a lighting device's lighting LED as Test LED would require to provide this space between the whole LEDs PC-Board and the lighting device's transparent display window, therefore substantially increasing the overall lighting device's dimension.
>
> . . . .
>
> To overcome these issues separate test LEDs driven with individual current sources can be used.

'524 Patent at 15:39–16:5 (emphasis added).

Nonetheless, as discussed above regarding the "luminosity measuring means," Claim 1 of the '524 Patent does not recite any limitation to exclude ambient light. Analogously, Defendant has not shown that Claim 1 necessarily requires collecting *all* of the light from a selected LED. This is a specific feature of particular disclosed embodiments that should not be imported into the claim. *See Constant*, 848 F.2d at 1571; *see also Phillips*, 415 F.3d at 1323.

Instead, as Plaintiff has proposed, the disputed term uses the phrase "selected from among" to indicate a group of alternatives. *See Multilayer*, 831 F.3d at 1357 (noting that a *Markush* group is simply "a listed group of species that are useful for the purposes of the claim"). The disputed term does not conform to the standard format for a *Markush* group. *See Gillette Co. v. Energizer Holdings, Inc.*, 405 F.3d 1367, 1372 (Fed. Cir. 2005) ("A Markush group by its nature is closed. If an applicant tries to claim a Markush group without the word

'consisting,' the PTO [(United States Patent and Trademark Office)] will insist upon the addition of this word to ensure a closed meaning. Thus, in order to 'close' a Markush group, the PTO insists on the transition phrase 'group consisting of.'"). Nonetheless, the recital of "selected from among" in the disputed term is sufficiently clear. *See Multilayer*, 831 F.3d at 1357 n.2 ("Under the PTO's guidelines for patent examination, '[a]lternative expressions are permitted' so long as the claim 'recites a list of alternatively useable species' with no 'uncertainty or ambiguity with respect to the question of scope or clarity of the claims.' '[T]he phrase 'Markush claim' means any claim that recites a list of alternatively useable species regardless of format.'" (quoting MPEP § 2173.05(h)).

The Court therefore construes **"wherein said one or more test light emitting diodes are selected from among light emitting diodes which are part of said illumination groups and which are separate from said illumination groups"** to mean **"wherein said one or more test light emitting diodes are selected from the group consisting of: light emitting diodes which are part of said illumination groups, and light emitting diodes which are separate from said illumination groups."**

CONCLUSION

The Court adopts the constructions set forth in this opinion for the disputed terms of the patents-in-suit. The parties are ordered that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

IT IS SO ORDERED.

SIGNED this 30th day of June, 2017.

AMOS L. MAZZANT
UNITED STATES DISTRICT JUDGE